



OCTOBER 1951

# Soil Conservation

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

# SOIL CONSERVATION •

**CHARLES F. BRANNAN**  
SECRETARY OF AGRICULTURE

**HUGH H. BENNETT**  
CHIEF, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
WASHINGTON, D. C.

OCTOBER — 1951  
VOL. XVII — NO. 3



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### WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, under approval (August 6, 1951) of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

15 CENTS PER COPY

\$1.25 PER YEAR

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**CONDITIONAL SALE.**—Albert Kipfer, a former director of the Menominee County (Mich.) Soil Conservation District, recently sold his farm under a unique contract provision which makes it mandatory for the buyer to follow the established soil conservation practices and the recommendations of the district.

**WILLING ACRES.**—A 60-minute, sound-color film, sponsored by The Keystone Steel and Wire Co., Peoria, Ill., and produced by The Venard Organization of Peoria, is dedicated to America's farmers who would use their acres wisely.

While primarily concerned with the conversion-to-grass angle of soil conservation,

(Continued on page 71)



**FRONT COVER.**—This view is of the farm of Blake Boyd, Holmes County, Ohio. Contour strips in lower right are on the adjoining farm of Robert Troyer. The pond at the left was built under the supervision of Soil Conservation Service technicians, as part of the conservation plan. The photograph was made by Dick Burwell.

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# DISTRICTS PROFITABLE CUSTOMERS OF LOCAL GOVERNMENTS

By HUGH F. EAMES

**F**OR the use of publicly owned highway equipment in installing conservation farm plans in 1948, 1949, and 1950, nearly 400 district farmers in Wyoming County, more than 300 in Chautauqua County, and over 100 in Steuben County paid more than \$100,000 into town and county treasuries in New York State.

This extra income has been an important factor in reducing public debt and strengthening the financial status of local governments. It also has made it practicable to buy modern labor-saving equipment that will do public work more efficiently.



This bulldozer, owned by the town of Perry, N. Y., is building a pond on the John MacMurray farm.

What these cooperative operations mean to the taxpayers of these three counties and their subdivisions is shown in official reports of the revenue each has received from the district cooperators:

County	1948	1949	1950	Totals
Steuben	\$ 1,662.40	\$17,459.32	\$15,888.18	\$35,009.90
Wyoming	14,087.69	12,497.60	11,881.37	38,466.66
Chautauqua	9,462.01	13,355.43	5,770.94	28,588.38
Totals	\$25,212.10	\$43,312.35	\$33,540.49	\$102,064.94

In addition to the 3 county treasuries, the funds of about 50 town or township governments have been augmented importantly.

In Steuben County, for example, Pulteney has received \$9,336.50, Hartsville \$7,506.30, and Bath \$6,153.41 in 3 years.

Hanover, in Chautauqua County, has been paid \$9,074.

In Wyoming County, Perry has received \$4,890, Wethersfield \$5,394, and Sheldon \$8,701.

When the town of Bath, in Steuben County, received two district checks totaling \$7,720.69, it became debt-free for the first time in 10 years. Wiping out of public debt was accomplished in the face of ever-increasing post-war expenses and machinery certificates (debt) exceeding \$50,000. In 5 years the district has paid \$8,230.16 into the Bath treasury, and \$8,821.38 to Pulteney. In 4 years Hartsville has received \$9,792.85.

Because of opportunity to keep modern highway equipment in steady use, by cooperation with soil conservation districts, county and town officials have consulted with SCS technicians and district directors for guidance in buying the kind of equipment that is most useful.

Towns and counties do not receive the same payment as private contractors for use of their equipment. In New York State the rates for use of State, county, and town machinery are set up by the State Department of Public Works and the Office of the State Comptroller. In general, they are about 25 percent less than the rates charged by private contractors.

Conservation farmers like these cooperative arrangements with towns and counties because heavy "moving-in" expenses are eliminated. A disadvantage sometimes is the inability to get the use of the equipment just when it is wanted, but this is offset by the lower costs that make waiting worth while when there is a lot of work to be done.



Grader owned by Warsaw, N. Y., here is building a diversion on the Coe-Carpenter farm, in Wyoming County.

Note.—The author is with the regional information division, Soil Conservation Service, Upper Darby, Pa.

# GREEN REVOLUTION

By HUGH BENNETT

**S**OIL conservation is turning the United States green. Green pastures, green woodlands, and green landscapes are covering up millions of acres where, a few years ago, little or nothing was produced, where erosion was severe and fields were bleak and gullied.

Look at the South: That section is rapidly turning over a new leaf—a green leaf—in its progress toward a well-balanced, sustained, and profitable agriculture. Pastures are being developed on a rapidly expanding scale. Pine woodlands are being protected from fires and excessive grazing. The land is being used for what it is best suited to produce, and safeguarded from erosion.

This revolution on the land began with the establishment of the conservation program in the early thirties. There was agricultural improvement before that epochal date, to be sure, but it was more or less of a local nature and to a large degree overlooked sound land use. The discovery that pine trees were a merchantable crop helped some sections to get started. But it was the conservation program—good land use and protection of the land from erosion—that really brought on the revolution. This paid the highest dividends southern farmers had ever known. And it has been much that way throughout the country.

In the South, grass, milk, beef, pine trees, and good land use and protection made up the pattern of revival. Southerners were the first of the Nation to try to halt the destructive inroads of erosion, but the one-practice system they started out with—hillside ditching—back in the early 1800's, was the wrong system, although temporarily helpful on some farms. Those early attempts at soil and water conservation were quite generally restricted to terracing. There was little thought of land use. Vast forests of pine and mixed pine and hardwoods were cleared without regard for the suitability of the land for cultivation. Literally millions of acres of fine woodlands were stripped of magnificent stands of pine and hardwoods on slopes too steep for cultivation of any kind. These lands were not long going to waste by way of rapid ero-



Bees are necessary for good seed production from the clovers. These hives, belonging to Clyde Hansen, of Livingston, Ala., are on the farm of Sheldon Sheffield, of Greensboro, Ala.; the honey is regarded as fair exchange for the pollination services performed.

sion. Not only was the land ruined for cultivation but vast quantities of valuable timber were wasted.

From the beginning, the Soil Conservation Service based its work on using the land as nature made it (that is, according to its capability), and protecting it from the ills of erosion, waterlogging, and other deficiencies resulting from man's careless use of the land. This program has lifted the South's agriculture out of a variety of fundamental difficulties, as it has done, also, for the entire Nation. When the job is completed—it could be completed, and ought to be, in about 20 years—our agriculture at last will be on a sound, stabilized, and orderly basis.

With the initial program completed, the task will be to give diligent attention to maintenance and improvement. If better varieties are discovered, or better methods of fertilization or cultivation—whatever the advances in science or technology—farmers and ranchers will be entitled to the fullest possible advantage.

In May 1951 I made a trip of inspection through the Southeast—across Virginia, the Carolinas, Georgia, Alabama, Mississippi, and Tennessee—to see just what was taking place out on the land. For many years I have been intimately acquainted with the region, having visited every county of the seven States—not sightseeing, but studying the land and its needs. I have lived with its agriculture and kept close scrutiny of its progress, or lack of progress, since the first of July 1903, when I began work in the old Bureau of Soils, classifying soils and studying local and regional land conditions. I witnessed the harvesting of the South's vast forests and the use, or misuse, of the lands that were brought under the plow as the result of the stupendous lumbering operations.



I vividly recall the old-fashioned log-rolling jambores and the wholesale clearing of millions of acres that were put into cultivation more or less without regard to the adaptability of the land. And I witnessed, too, the burning of vast quantities of valuable timber cut down in these clearing operations in order to have "new ground" to replace the erosion-impooverished fields that had been brought to the lowly level of producing "bumble-bee cotton" and "7-bushels-per-acre corn."

On the soil survey I sometimes worked a little late during winter and spring just to see the nightly spectacle of girdled trees—often fine longleaf pine—purposefully burned to get them "out of the way" of plowing. The fires were most spectacular on dark nights. Along the entire length of these dried-out girdled trees, still standing, one saw intermittent brilliant flares as blazing broke out from extra-resinous spots in the wood. These could be seen at intervals from the ground up to 40, 50, and 60 feet above the ground. Now and then the whole burning upper part of a tree would come tumbling down in a spectacular burst of sparks. With February and March winds, these burning areas were unsafe to drive through, so that we sometimes had to look for overnight accommodations at a neighboring farmhouse.

Sawmills of those early days were big mills for the most part. Small, portable outfits had not come in to any great extent. Small operators were generally unable to sell boards and cross ties for a worth-while profit.

And, too, I became painfully familiar with the widespread impoverishment resulting from sheet washing as well as devastating gullying. Some of the erosion effects we ran into were astonishing indeed. They made me wonder about the economics and agricultural teaching of those days. Some of the scholarly classics had overlooked some extremely fundamental land facts, apparently because the authors had not really seen what they had been looking at during and after heavy rains.

In 1910, when we were making a soil survey of Lauderdale County, Miss., we were astounded to find, while traversing the main highway leading south from Meridian, along the crest of one of the highest ridges in the county several places where gullies, ascending the slopes from opposite directions, had cut into one another across the crest of the ridge to such depth that bridges had to be built to keep the road open for traffic. The gullies, of

course, had not cut out their deep channels by any process of water running uphill; they simply had extended their channeling upslope by the cutting effects of water running in at the upper ends. In this manner, the cutting beginning on lower slopes gradually worked up to the crest of the divide from both sides of the road, where the two incisions joined.

In another part of the county we were trying to close a plane-table traverse one day by joining up with the main road to the east of a side road we had surveyed out from the main road to the west. We had encountered along the side road a severely gullied area that had obliterated all evidence of a negotiable roadway. Not to be outdone (and we were young enough for that at the time), we unhitched our horses and got them across the gullies on foot. Then we took the buggy apart and somehow got it over piece by piece. Putting the parts back together, we inspanned and continued the survey. After a bit we came to a farmhouse, by the back way. The farmer came out, obviously puzzled at our sudden appearance from a direction no vehicle had traveled for decades.

"Howdy, boys! How are you getting along?"

"Well, sir, just now we are doing pretty good."

"By the way, where did you drive in from?"



Caley-peas are a standard legume crop in the Black Belt of Alabama. P. G. Compton, of Gallion, regards with satisfaction the growth on this field after a winter of grazing by his dairy herd.

"We drove in from Hog Nose Creek road."

"Rough going, wasn't it?"

"In spots, yes."

"Just how did you come?"

"We came along the fence, north side of that cornfield over to the west of here, and then straight along through the woods."

"Didn't you run into a lot of gullies?"

"At one place there were some gullies, yes."

"Well, I am glad to see you fellows, and I hope you won't run into any bad road conditions on your way out to the Meridian road. I suppose you must have had some particular reason coming the way you did?"

"No special reason except that we're making a base map for our soil-survey work in Lauderdale County, and we wanted to tie up with the road east of here which we surveyed some time ago, so as to correct any error that might have crept into our measurements."

"Well, I think I may see what you mean; but anyway I want to say you are the buggy-drivingest boys I ever saw. Won't you come in and have a bite to eat with us; dinner's ready."

And, of course, we were ready, as usual!

Getting back to the story: these items I have set down in order to develop something of a basic perspective of what was going on in much of the Southeast, and other parts of the country, around a half century ago—vast soil and water losses, timber wastage, slopes that were gullied, bare, brown, and bleak from October to April!

On this recent trip I saw, for example, pine forests, in solid stretches of beautifully growing green trees, sometimes 10 miles across, where, in the old cotton belt of central Georgia, I had seen, before the boll-weevil exodus of the farm population, cottonfields and cornfields in almost endless array.

I saw, also, in every State, a large increase in pastures—good pastures, with good stands of adaptable grasses. These I saw on the sandy lands of the coastal plains country, on the Piedmont clay lands, in stream bottoms, and throughout the Alabama-Mississippi Black Belt. It was springtime; the pastures—every one of them—were carpeted with the greenest of grasses, often mixed with white clover in sparkling blossom. Both beef and dairy cattle were of good breeds and grades, and everywhere were reported as money makers.

A matter that seemed of much importance was the way the livestock industry is spreading all

through the South, even in the sand hills, an area which a couple of decades ago was generally considered too poor for grass. We now have adaptable grasses for nearly every part of the country. The story of what the Service has done in ascertaining the grass needs of the various parts of the Nation and in developing seed supplies to help meet these needs reads like a miracle.

The Soil Erosion Service (trail blazer of the Soil Conservation Service) started work in September 1933 during the great drought. Early in its life, the Service came to a critical period when it desperately needed better grasses to combat dust storms that were afflicting millions of acres in the Great Plains. It soon developed that we not only didn't know very much about what grasses were



Here examining a stand of pasture grass on the Holmes farm are A. D. Holmes, Jr., of Gallion, and Willie Tucker, district conservationist. The mixture is Suiter's grass, Caley-peas, black medic, smooth vetch, and lappa clover. Holmes is a supervisor of the Black Belt Soil Conservation District.

particularly suited to the various problem areas of the country, but there was no seed supply of a great number of native grasses. Accordingly, when the Service was moved from Interior to Agriculture, there came the opportunity for it to do something about the matter. Something was done—quite promptly.

I was told in my first Department of Agriculture interview as Chief of the Soil Conservation Service that the new soil conservation nurseries were to be operated by us. Here was the golden opportunity. I gave immediate instructions to our nurserymen to go out along the highways and by-

ways and bring into the conservation nurseries every native grass and legume, together with all strains and varieties thereof, which showed any promise of fitting usefully into any particular niche of the Nation as a good or better pasture or ranch grass, or as a worth-while soil-saver. This was done all over the country, and eventually something over 40 grasses and legumes were domesticated and put to use in the control of erosion by both wind and water. Among the most outstanding and extensively used are the 22 included in table 1, where also are shown the results of 1 year's collection of seed attributed to the efforts of the Service.

TABLE 1.—Twenty-two native grasses now in extensive use, whose domestication was attributable directly to nursery observational studies of the Soil Conservation Service, together with quantities of seed harvested in 1950

Name	Seed harvested 1950 as result of SCS efforts
	Pounds
Sherman big bluegrass.....	101,000
Bromar mountain brome.....	215,000
Cucamonga brome.....	5,500
Beardless wheatgrass.....	16,000
Whitmar beardless wheatgrass.....	
Primar slender wheatgrass.....	114,000
Western wheatgrass.....	33,000
Elreno side-oats grama.....	403,000
Vaughn side-oats grama.....	
Blue grama.....	401,000
Slender grama.....	13,000
Blackwell switchgrass.....	16,000
Sand lovegrass.....	618,000
Purple needlegrass.....	6,000
Green needlegrass.....	
Big bluestem.....	263,000
Little bluestem.....	1,381,000
Sand bluestem.....	22,000
Buffalograss (burs).....	16,000
Yellow Indiangrass.....	368,000
Indian ricegrass.....	1,000
Sand dropseed.....	350
Total.....	3,992,850

At the time this observational work was started in the nurseries, the grasses listed here were not quoted for sale in any seed catalogs we could get our hands on. In the instance of western wheatgrass, for example, I heard a prominent seed dealer say that when the Soil Conservation Service began this work he was sure that no one could have bought a spoonful of this seed in any seed house.

"Now," he said, "I can supply western wheatgrass seed in carload lots."

We had much the same experience with the other natives listed, and still additional ones are under observation. Some of these have come into such common usage that the trade pretty well takes care of the supply, without Service assistance.

Again, take western wheatgrass: In early days of seed collection, the Soil Conservation Service was, directly and indirectly, responsible for harvesting from the wild more than a half million pounds of this useful grass. In 1950, however, only 33,000 pounds were collected. Seed of this grass can now be obtained from various seed houses.

Little bluestem, on the other hand, was either grown on the Service nurseries or harvested from the wild at the suggestion of the nurserymen, in 1950, to the extent of 1,381,000 pounds.

At one time Atlee L. Hafenrichter and his associates showed me several hundred strains of big bluegrass (*Poa ampla*) and others that were being observed on the soil conservation nursery at Pullman, Wash. "Haf" had observed many of these strains as he traveled about the country and had found others while collecting promising looking plants for his nursery observational work. Now the best of the numerous varieties and strains have been fitted into adaptable places of the Palouse's agriculture.

The Service has had a hand in spreading the use of the more promising of the introduced grasses, together with several new strains of these found by our nursery personnel, to adaptable areas in nearly all parts of the country. Many of those which farmers had successfully used here and there have been spread widely to adaptable areas.

Take, for example, Suiter's grass (called tall fescue or Kentucky fescue): A hundred pounds of seed of this were bought in 1941 by the Soil Conservation Service from the Suiter farm in eastern Kentucky and increased in quantity on our nursery at Chapel Hill, N. C., sufficient to supply seed enough to soil conservation districts in the Southeastern States to plant one or more 5-acre seed-increase plots in 686 counties. From this, Suiter's grass has spread well across the Southeast and far beyond on a tremendous area found to be well suited to this splendid grass, which remains green and palatable deep into winter. When I was in Texas in March, this year, I saw a large planting of Suiter's grass in the coastal prairies section west

TABLE 2.—*Pasture and range improvement work in 13 Southern States planned and applied to the land in soil conservation districts with Soil Conservation Service assistance cumulative to December 31, 1950*<sup>1</sup>

State	Pasture improvement		Range improvement	
	Planned	Applied	Planned	Applied
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Alabama	1,367,063	1,018,377	—	—
Florida	1,435,998	450,050	459,408	182,001
Georgia	1,726,953	1,265,219	8,156	3,291
Kentucky	1,462,723	1,035,377	—	—
Mississippi	1,799,715	1,345,088	2,275	145
North Carolina	491,909	381,310	—	—
South Carolina	428,220	287,480	716	703
Tennessee	512,358	379,543	—	—
Virginia	964,810	711,693	—	—
Southeastern States Total	10,189,749	6,874,137	470,555	186,140
Arkansas	2,085,094	1,290,605	80	80
Louisiana	1,056,943	755,866	15,334	5,232
Oklahoma	1,925,790	1,042,672	5,224,065	3,906,793
Texas	3,899,387	1,924,268	24,153,999	13,962,052
Western Gulf States Total	8,967,214	5,013,411	29,393,478	17,874,157
Total 13 Southern States	19,156,963	11,887,548	29,864,033	18,060,297
Percent of national total	59.3	63.0	36.7	37.4
National total	32,323,753	18,862,970	81,341,577	48,324,583

<sup>1</sup> Compiled from work reports of the Soil Conservation Service showing pasture and range work completed in soil conservation districts.

of Houston, where I saw, also, some 400 visiting Canadian geese grazing on this grass.

Similarly, the Service has spread the wild winter pea for winter grazing over the Alabama-Mississippi Black Belt and widely into adjacent areas. Blue lupine, an importation, scarcely used 10 years ago, now is on hundreds of thousands of acres as a green-manuring and soil-holding crop, principally on peanut land. This was started by the Soil Conservation Service with a few pounds of seed obtained from the Florida Agricultural Experiment Station, where there was a small station-produced supply. Representatives of the Peanut Growers Association of the Southeast came to my office early in World War II and earnestly solicited Service help for the peanut program. This was readily agreed to; and we were able to control erosion very well by getting a cover of blue lupine on the land to protect it following harvest.

During my recent trip in the Southeast, I saw, in one continuous body, near Montgomery, Ala., 90,000 acres of black-belt upland planted to pasture grasses (mainly Dallis and White Dutch clover, with an overseeding of Caley-pea in many places for winter and spring grazing). Again, I saw the same thing on 150,000 acres in the black-belt section, near Demopolis and Greensboro, Ala. All these pastures were being used for beef and dairy

purposes. Most of the animals were purebreds or high-grade cattle. *The 150,000 acres of land was practically a continuous block of pasture.* Most of it had been eroded under cotton and corn to such an extent that the original black topsoil had been stripped off, down to a yellowish-brown, limy clay subsoil. Previously, I had seen all of this land in cotton and corn, and had mapped a good deal of it while doing soil-survey work.

*Probably this wholesale change from cotton and corn to grass had never been equaled anywhere else on earth. I think it undoubtedly represents the world's best and biggest example of a complete, quick transformation from one set type of agriculture to a distinctly different and much better type of agriculture. The Soil Conservation Service, working with farmers, planned most of this, farm by farm. Some of it was the result of the spread of practices from the original work of the Service.*

Table 2 shows how the improved pasture and range movement is progressing in the Southern States, compared with the Nation as a whole. Of the nearly 19 million acres of improved pasture in the United States, for which plans were made by the Service, the 13 Southern States (where the work consisted largely of establishing new pastures) have developed nearly 12 million acres, or 63 percent of the total. Of the 48 million acres of



TABLE 3.—*Census figures on "All Cattle and Calves," for 1940 and 1945 census years and BAE estimates for 1950,<sup>1</sup> together with increase of 1945 and 1950 over 1940 reports*

State	1940	1945	1950
Alabama	889,983	1,282,378	1,476,000
Florida	721,015	1,114,917	1,503,000
Georgia	803,357	1,140,416	1,330,000
Kentucky	1,130,152	1,417,585	1,721,000
Mississippi	1,139,660	1,655,084	1,791,000
North Carolina	540,015	721,177	788,000
South Carolina	274,586	389,287	396,000
Tennessee	1,108,869	1,427,272	1,550,000
Virginia	815,517	1,030,420	1,197,000
Total Southeastern States	7,423,154	10,178,536	11,752,000
Arkansas	982,173	1,259,139	1,282,000
Louisiana	1,051,901	1,475,425	1,569,000
Oklahoma	2,194,647	3,101,301	2,814,000
Texas	6,281,537	8,864,425	9,260,000
Total Western Gulf States	10,510,258	14,700,290	14,925,000
Total 13 Southern States	17,933,412	24,878,826	26,677,000
Percent increase over 1940		38.7	48.7
United States Total	60,674,736	82,654,417	84,179,000
Percent increase over 1940		36.2	38.7

<sup>1</sup> Release on "Livestock and Meat Situation," Bureau of Agricultural Economics, as of Jan. 1, 1951.

range improvement, the 13 Southern States accounted for 37 percent.

Table 3 summarizes the statistical movement of the cattle industry in the country, as indicated by

the numbers of "All Cattle and Calves" for the years 1940, 1945, and 1950.

This is part of the story of the Green Revolution—principally what it is doing for the country and how it came about.



Sixty head of Jerseys graze on White Dutch, lappa clover, and Dalligrass on this Black Belt farm. Twelve years ago this was row-crop land, and then more or less abandoned as pasture land. It was given oats for 2 years, shallow disked with 400 pounds of 0-14-10 fertilizer per acre the first year and 500 pounds of superphosphate in succeeding years. By 8:30 in the morning the cows are full and resting.

# INSTITUTE DEALT WITH ECOLOGY OF MAN

By WELLINGTON BRINK

**Y**EAR by year, we contrive to shorten a little the distance between city dweller and farmer. To do so takes harmony of thinking and understanding. It also takes some worrying and planning and working together. We now are beginning to see that there is a banker or store clerk at the end of every corn row, and that there are growing boys and girls at the end of every milk line. We can thank Friends of the Land for taking the lead in demonstrating the oneness of producer-consumer interests, and for dramatizing effectively the connection between a healthy agriculture and a healthy people.

Every summer, through a full decade, Friends of the Land has conducted a unique institute concerned with conservation, nutrition, and health. This institute has become justly famous for the skill with which it joins issues, consolidates scientific findings, and brings to its platform many of the country's foremost figures in conservation thought and inquiry.

The institute has followed a flexible and progressive pattern through the years, under the inspired leadership of Ollie E. Fink and Dr. Jonathan Forman. Its tentative beginnings were in the quiet woodland environs of Tar Hollow, Ohio. Its adventurous middle years resided in Coshocton and Athens, Ohio. But with the coming of maturity and a fuller sense of where lie its largest obligations, the institute, these last 2 years, has made its home in Chicago, that lusty mid-American metropolis where industry and agriculture meet in jovial embrace. Instantly a happy choice, the institute here commands its largest, most attentive, and most important audience. Registering for the 3-day sessions are bankers, utility executives, educators, men of medicine and manufactures, representatives of railroads and chemical companies, leaders in garden clubs and other organizations, students and housewives—all friends of the land, and actual or potential Friends of the Land. These are spokesmen for soil stewardship, key men and women of town and country who take back home for propaga-

tion the seeds of a new and needed knowledge on conservation-nutrition-health relationships.

Two highlights featured the most recent institute, June 21-23: (1) the lively discussion precipitated through papers presented by Dr. William A. Albrecht, of the University of Missouri, and Dr. Richard Bradfield, of Cornell University; and (2) the apparent impact on the medical profession in the Chicago area of papers presented by Dr. John J. Miller, of the J. B. Roerig Company, and Dr. W. F. Dove, of the University of Illinois.

Albrecht, sharing speaking duties at the dinner meeting with the celebrated Louis Bromfield, took as his topic, "Reconstructing the Soils of the World to Meet Human Needs." He outlined the possibility of providing adequate shelter, clothing, and food for an increasing population. He reasoned that chances are good for production of sufficient cellulose to meet expanding needs. He was almost equally hopeful for fibers, but emphasized that since wool is a protein product it requires productive soil. As to food, he was mildly pessimistic that reconstructed soils will be able to feed adequately the anticipated world population.

Bradfield, on a more optimistic note, stressed the need for better distribution of fertilizing materials. He indicated that many Maine potato growers are using as high as eight times the required amount of phosphorus; that in New Jersey many farmers are using at least four times the phosphorus needed. In the Middle West, the reverse often obtains.

Miller stressed the indispensability of trace elements in relation to functions performed by enzymes. He emphasized the importance of magnesium, zinc, and copper along with some of the better known trace elements such as cobalt and iodine. He presented a cancer map which pointed up a heavy incidence of the disease in the Northeastern States and California as compared with light incidence in the Southern States and most of the West.

Charles D. Jeffers, of Pennsylvania State College, aroused considerable discussion when he implied that good farms are usually found in regions where there is considerable feldspar.

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Bromfield, as always, rang a response from his audience in his address on "Reconstructing the Farm to Meet Its Individual Needs." He stated that a few years ago the four brightest sons of a farmer could be expected to move to the city, leaving the less-smart son to help out on the farm; today, however, he pointed out that it is the "dumb" boy who seeks his opportunity in the city, whereas the brilliant lads know their best future is on the land.

Edward J. Condon, president of Friends of the Land, introduced the dinner speakers. The eloquent C. W. Bailey, chairman of the organization's

board of directors, was a surprise speaker at this session.

Among the speakers, also, were Garth W. Volk, Ohio State University; Paul B. Sears, Yale University; F. W. Went, California Institute of Technology; George D. Scarseth, American Farm Research Association; Ruth Griswold, University of Chicago; Faye W. Grant, Northwestern University; Ancel Keys, University of Minnesota; and Theodore W. Schultz, University of Chicago.

This institute, neatly summarized Jonathan Forman, dealt with the ecology of man—all the forces in and around man which affect his health and well-being.



## WHY I BELIEVE IN SOIL CONSERVATION

By SUSAN MYRICK

**"B**RED and bawn in de brier patch" in Baldwin County, Ga., I grew up on a plantation, land which had been in our family for more than a century, so my roots are deep in the soil. My earliest recollection is that of riding behind my father on the horse as he rode over the plantation supervising the work of Negro tenants.

I remember how my father rotated crops even in that day when Cotton was King in the South, how he read farm magazines and tried to follow "new methods" in agriculture, and how he always had a rye patch for the Jersey cow and a green range for the chickens and oats for the hogs' grazing.

But the boll weevil came, sending much of the Southland into economic chaos. I had to leave college and teach in order to save some money to go back to finish my studies.

So, my early life is tied closely to the land, and agricultural economics is something I learned the hard way. It is natural, then, that I should follow closely the story of progress on the Georgia farm and find pleasure in the improved standard of living for the farm family.

That progress, I believe, is due to a number of things: 4-H Club boys and Future Farmers of America have grown up and started farming, putting into practice some of the scientific knowledge of agriculture they have acquired; the exodus of the Negro laborer from the Georgia farms has forced the white farmer into more intensive cultivation and the use of farm machinery; and Government aids have enabled the farmer to finance his farm program.

About the time those things were happening, came the founding of the Soil Conservation Service and the soil conservation district. Farmers became conscious of the fact that Mr. Doe, a few miles down the Big Road, was producing higher yields and earning a higher income than Mr. Roe, who lived up the road a piece.

Why?

Because a "new fellow" in the county, a work unit conservationist, was helping Mr. Doe to follow a mapped plan of land use. Because Mr. Doe had planted cover crops, terraced fields, sodded waterways, followed good rotations; because Mr. Doe was a soil conservation district cooperator—a conservation farmer.

Note.—The author is associate editor of the *Macon (Ga.) Telegraph*.

So, other farmers began getting plans on their land, learning about land classes, using their acres according to their capabilities, and treating them according to their needs.

During the past 10 or 12 years in Georgia I have seen changes in agriculture that I can scarcely believe, even when I see the results. Where once were gullied, tired, run-down acres, grasses and legumes grow and herds of cattle graze; where bare soil in peach orchards once washed steadily away, pastures now flourish, the peach trees pulled up and destroyed; where cotton once followed cotton on the same acres year after year, small grains, legumes, lespedezas, and clovers are now rotated; peanut lands, once washed and depleted, are now covered each winter with blue lupine that provides nitrogen and a great load of green manure.

During the past decade, too, I have seen farmers and their families come to enjoy the comforts that the city dweller takes for granted—indoor toilets, electric stoves, bathtubs, refrigerators, washing machines. And most important of all, I have seen them acquire a new dignity and a new happiness by reason of improved economic status.

I cannot say that soil conservation alone has brought these fine things; higher prices, PMA payments, the REA, and the FHA, experiment stations with their research workers—many factors have aided the lot of the farmer. But no other one thing has made so great a contribution to his welfare as the soil conservation program.

As farm editor of the *Macon Telegraph and News*, I visit three or four farmers each week, and farmer after farmer tells me of his increased yields, more fertile lands, and better income resulting directly from his soil and water conservation farming.

How does it happen that a woman is a farm editor? Some 5 years ago, Publisher Peyton Anderson asked me what I considered the greatest service the two newspapers could render their readers. Since a large part of our circulation (about 52,000) lies in small towns and villages and rural areas, and since agriculture is the major source of income in our Middle Georgia area, we decided upon agricultural promotion. And soil conservation was the phase of better farming we decided upon as of most importance to both farm and city man.

My first enthusiasm for conservation came, I think, from reading Stuart Chase's "Rich Land Poor Land," about 1936. I have been a regular

reader of Russell Lord's *The Land* for a long time, and I was sold on conservation.

So, Publisher Anderson said for me to go to it with conservation promotion and a farm page and whatever I thought wise.

On our farm page each Sunday, and in our daily papers now and then, we tell stories of farmers who have made better yields and higher incomes because of their soil and water conservation practices; because they have put steep lands into pastures or trees, because they have rotated crops and added organic matter to the soil by the use of cover crops and litter, because they have terraced those fields which needed terraces and slowed the water down to a walk through meadow strips; because, in short, they are following the plans set down for their farming program by the Soil Conservation Service.

Publisher Anderson has encouraged the promotion in every way and allotted a generous budget for carrying it forward. The newspapers have entertained district conservationists and work unit conservationists at luncheons in order to get closer to the problem and learn more about it, and to promote the education program on conservation which we have set up for schools in our area.

Such schools as enter the contest work for points; 1,000 points out of a possible 1,500 will earn a trophy for the school. Points are awarded for seeing conservation movies, reading and discussing conservation bulletins, writing essays or poems or slogans on conservation, presenting school programs with conservation for the theme, making scrapbooks on conservation in their own communities, and interviewing farmers on conservation practices.

Working with the education program, I found a dearth of conservation material for school boys and girls; most bulletins are too technical for the seventh or eighth grader's understanding. I began to think of writing a textbook on conservation. Then I decided that conservation education should begin in the primary grades; so I wrote "Our Daily Bread," a third-grade social science reader with conservation as its theme. It has been adopted by Georgia and North Carolina school systems.

Yes, I believe in conservation. Fashioned of the soil, man has, through the ages, depended upon the soil for his existence. ("And God formed man of the dust of the ground.")

Conservation of soil and water is our most important duty, for soil and water and their products are vital to the survival of civilization.



# NEW NURSERY METHODS CUT COSTS IN HALF



Morris demonstrates how cylinder is pushed down around plant.

By VIRGIL S. BECK

ONE of the important projects of the SCS nursery at Tucson is the production of small trees and shrubs for use in establishing windbreaks on irrigated farms in soil conservation districts of southern and central Arizona and New Mexico.

Until a few years ago the bare-root plants were set in soil in paper pots. Because of high temperature and low humidity, mortality ran high and the cost of production was larger than at other nurseries where this type planting was used.

This problem succumbed to the ingenuity of Edward H. Morris, who is in charge of the nursery's technical operations and propagation. Production costs have declined by more than half, and two or three lots of plants now are being produced annually where one lot previously was grown. In



Cylinder is placed over push plug and plant ejected.



Tar paper is fastened with compression stapler.

1950 the nursery produced 40,000 trees, mainly eucalyptus, Arizona cypress, and African sumac, and several other species of trees and shrubs in smaller quantities.

What Morris did was to work out a new method of growing seedlings, and a highly efficient way to pot them.

Note.—The author is with the regional information division, Soil Conservation Service, Albuquerque, N. Mex.

First, he decided to employ benches rather than open beds. This was mainly because he could not lower the pH to any extent in beds. The eucalyptus seedling is unusually sensitive to alkaline conditions and satisfactory growth cannot be made if the soil has a pH much above 6.5.

By using concrete benches, Morris found that the pH can be reduced easily by using sulphur and sulphuric acid. The salts then are leached out after the soil has been treated.

Another reason for using benches is that there is less damage from insects than in open beds, and they are more easily controlled. The plants can be kept free of root-rot fungus and nematodes.

Morris says he has learned that the soil should be at least half organic matter. This aids growth and facilitates balling. Plenty of humus binds the soil together, so the balls are compact and easily handled. Morris had difficulty in getting this condition in open beds, but it is easily obtained in the benches.

It was found that the seedlings should be grown close together in the benches, a spacing of  $3\frac{1}{2}$  to 4 inches between rows being satisfactory. If they are not, several branches form near the ground and the plants do not lend themselves well to balling. Plants are balled out when they are from 4 to 8 inches high, and are grown in the balls until ready for use. Plants larger than 8 inches are very difficult to handle. They wilt easily, and, once wilted, may be lost.

Morris outlines his plant-producing system thus:

1. The concrete benches, 5 feet wide and 48 feet long, are filled with soil and compost, half and half.
2. The soil is treated with 1 pound of sulphur to 20 square feet and 1 gallon of sulphuric acid to 100 square feet.
3. Leaching. Fine sprays are used to prevent surface sealing. Water is applied for at least 24 hours to remove salts formed from the sulphuric acid.
4. The soil is allowed to dry and then the seeds are planted. Seeds are placed in a shallow trench but not covered. Sprays wash enough soil from the sides of the trench to cover the seeds.
5. Irrigations are of sufficient length to carry the water through the soil and leach out salts formed from the sulphur.
6. Fertilization starts when the plants form their first true leaves, when they are given a light application of ammonium nitrate. This is applied



Balled plants in boxes.

with a cyclone seeder immediately after irrigation. Tissue tests are run frequently and deficient minerals supplied as needed.

7. When the plants are 4 to 8 inches high, they are balled out. The plants then are kept under a fine spray for 2 days during the time the sun is shining. This permits the plants to recover from the shock of balling.

This may seem like a lot of handling, Morris admits, but points out that it is justified by the rapid growth of the plants, and that the bench system gives the possibility of three crops annually. This, he says, can be accomplished only if good seeds are used, the soil is properly prepared, and the plants are given adequate fertilizer in small doses.

In working out his system for balling the plants, Morris put in many hours of his own time studying scientific publications, and consulted with specialists of the University of Arizona.

The balling equipment, which Morris produced himself, consists of a cylinder sleeve insert,  $3\frac{1}{2}$  by 7 inches, from a 1941 Ford motor, to which two

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handles of strap iron are brazed; a push plug welded to a base; small sheets of tar paper; and a compression stapler.

The soil should be moist but not wet when the balling operations are started, Morris points out. First, the balling tube is placed over the plant and shoved into the soil. A slight twist breaks the column of soil loose from the bed and the plant then can be lifted out. Next, the balling tube is placed over the push plug and the plant is ejected through the top of the cylinder.

The ball then is picked up by placing the index and second finger of the left hand straddling the plant. The ball then is tilted to the left so the fingers of the right hand can be placed underneath.

Next, the ball is laid on its side near the middle of one of the small sheets of tar paper. The edge of the paper near the person balling the plant then is rolled over the ball with the left hand. The paper is held in place on the ball while the far edge is rolled forward. This is strictly a wrapping operation and the ball is not moved during the process. Finally, the paper is stapled while the ball is on its side. The balled plants then are placed in boxes and allowed to grow to usable size. Just before shipping, the balled plants are placed in the sun so the soil will harden and make handling easier.

Morris reports that he has removed from the bed and balled as many as 240 plants an hour, and that the average laborer handles about 100 an hour.

## BUILDING UP A RUN-DOWN FARM

By A. J. TROXELL

**W** H. IRBY started with a worn-out, gullied • Crowley's Ridge farm 10 years ago. Today, the gullies have disappeared. The once-bare slopes are covered with grasses and legumes. Irby has done a thorough job of rebuilding his 344-acre farm near Rector, Ark.

The farm that Irby bought had been row-cropped a long time. The pastures provided scant forage.

Today there is a striking contrast. Seventy-five fat Herefords, one hundred sheep, and one hundred and fifty hogs graze the lush legumes and grasses. The animals don't have to *hunt* for forage—they literally *wallow* in it!

Irby was a member of the board of supervisors of the Greene County-Crowley Ridge Soil Conservation District, one of the first in Arkansas. When Clay County landowners formed a separate district in 1946, he became one of its supervisors. He still serves in that capacity.

"The first thing I did was to get Soil Conservation Service field men working with the district to prepare a complete plan for my farm," Irby remembers. "I learned that if I were going to control erosion on this land I must change from row crops to grassland.

"It took a lot of doing to bring these changes about but it has been profitable. Production has



W. H. Irby.

more than doubled, and we can increase production farther. These deep Crowley's Ridge soils respond to good treatment. By maintaining a good ground cover of permanent vegetation we keep soil losses at a minimum and allow a good portion of the water that falls on the land to stay there."

Irby gives most of the credit to Raymond Davis, a tenant who is Irby's conservation partner.

Note.—The author is district conservationist, Soil Conservation Service, Jonesboro, Ark.

Davis operates the farm, cares for livestock, grows feed crops, and shares in the profits on a 50-50 basis. Irby pays for equipment, fencing, and permanent improvements. The two share the cost of fertilizers.

Big jobs already done include the building of a mile-long diversion terrace and four stock ponds; moving dirt to fill in gullies; sodding 55 acres and seeding 10 acres to Bermuda-grass; planting 54 acres to redtop, Ladino, white clover, and hop clover. Two tons of lime and three hundred pounds of fertilizer per acre were applied on the pasture.

Irby and Davis are developing year-round grazing. They will be able to produce all of the feed required on the farm. Fescue and Ladino or white clover, supplemented by crimson clover and oats, furnish winter grazing. Bermuda-grass and Korean lespedeza, supplemented by sericea lespedeza, furnish grazing during the hot, dry weather in

July, August, and September. Cultivated land is used for silage crops and temporary winter and summer pasture.

Irby and Davis are putting all of the land to the use for which it is best suited. Eighteen acres of woodland are receiving careful management. Selective cutting, thinning, and other conservation measures assure that these acres will yield about as much net profit as the other land of the farm.

Growing all of the feed on the farm will make it possible to produce livestock at much less cost. "We want to sell at the best possible prices, but we feel that we can more nearly guarantee a profit from our efforts by keeping production costs down instead of hoping always for high prices," says Irby. "We are more interested in net profit than we are in gross income. The more conservation work we do, the more profit we make, because our soils are becoming more fertile all the time."

## PINEAPPLES, MACHINERY, AND EROSION IN HAWAII

By NORMAN K. CARLSON

**E**IGHT inches of rain in one night is not uncommon on localized areas of Molokai, nor is it unusual for ten months to go by with less than one

Note.—The author, now on military duty, wrote this while working as work unit conservationist, Soil Conservation Service, Kaunakakai, Molokai, T. H.



Pineapples are planted to follow the terraces.

inch of rain. Eight inches is too much rain for pineapple lands—the damage to plants and land is terrific. Ten months of drought will not erode the land but the harvest will be greatly reduced.

One of the problems on the pineapple lands of Molokai has been the use of rainfall. Too often the Kona rainstorms (storms brought in on southern storm fronts) come so rapidly that much of the water flows into the ocean, taking a lot of soil with it. How weird a sight, those white-tipped waves on a reddened sea along the central and western half of Molokai!

The pineapple companies are keenly aware of the erosion hazard and of the drought hazard.

Pineapples are grown from about the center to the west end of Molokai—at elevations ranging from 400 to 1,800 feet above sea level. Pineapples tend to be more acid in higher elevations. The top lands are pineapple-covered, the fringes are in range and drop to the ocean. I have often seen range land that topped the agricultural land and dumped its water on the fields; here it is the reverse—the excess water flows from the pineapple lands through the range lands and into the ocean.

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Spray machine covers several rows at a time with its long arm.

There are two rain patterns on Molokai: the Kona storms and the trade rains. The Kona storms bring heavy rainstorms in from the south and they often do considerable damage. The trade rains are usually from the northeast and are relatively light; they fall throughout the year in mild showers. The Kona storms saturate the deep soils if they fall through several days; seldom do the trade rains penetrate more than an inch or two. Pineapples need an average of at least 30 inches of water per annum. Fair crops will grow with 20 inches if it is received in more than two storms.

Temperature averages about 68 degrees; there is little change throughout the year. The wind always blows—usually from the northeast.

The soil on which pineapples are grown is red, very red. The red dust gets in clothes and often stains them permanently. This volcanic soil is very deep and uniform in many places, there being very little change from surface to bedrock. In some places the pineapples are grown on shallow soils—even on soft grayish rock called paapakea; but here, they do not grow so well as on the good deep soils.

Pineapples are planted throughout the year by using slips, tops, or suckers. The crop is harvested the year round, though the bulk is ready in July

or August. Pineapples grown in the hot, dry, sunny sections taste the sweetest.

At present the pineapple is a 4-year crop and grows continuously if it has adequate moisture. It takes 14 to 22 months from the time of planting till the first crop is harvested, and usually one ratoon crop (and occasionally a second) is harvested. Plant stock produces the first crop of pineapples while each succeeding crop comes from suckers. Pineapples will produce several such ratoon crops but production drops sharply after the first, the limiting factors being insects and weeds.

The first pineapples on Molokai were in small holdings planted in 1918 at Kalae and from Wailau east to Halawa Valley. Due to undercapitalization and the business slump in the late twenties, the areas were abandoned. After 20 years we can still see the eroded rows where pineapples were planted straight up and down the steep slopes.

In 1923 Libby McNeil & Libby leased thousands of acres of land around Maunaloa at the west end of the island. Four years later California Packing Corp. came in and started large operations around Kualapuun on deep, rich, red virgin soils. In 1946 Pacific Pineapple Co. joined the group of large growers. Altogether, there are now about 17,000

acres of land in pineapples on Molokai.

The most hazardous period to the land is after the old crop is knocked down and before the new crop has become established.

On many a field there are 80 to 100 tons of green trash per acre to be knocked down and disposed of after the final harvest and before the new crop is put in. At first, the stumps and trash were burned. (Shades of a wheatfield in the Palouse!) Then, through the efforts of many, this was eliminated. The soil is plowed six to eight times before the land is ready to be planted; the bare soil, gradually deprived of organic matter, is open to heavy erosion for about a year.

*Recently, a new method has come forward to check the erosional process—the trash-mulch method. Eighty tons of trash is a lot to use. Wheat farmers growl when they have 5 tons.*

The trash-mulch method, however, not only helps reduce erosion but also knocks out a year of non-production. A 4-year cycle is cut to 3 years; that means almost continuous growing of pineapples. The land is never bare.

One of the big companies of Molokai is now using the trash-mulch method. It knocks down the 3-foot pineapple plants with a heavy cut-away disk. A short time later, the trash is used in combination with paper mulch to conserve moisture and reduce erosion.

The trash-mulch machine is mounted on a TD 18—and has more gadgets than an Army tank. On the front are two drums mounted on a turntable; these drums revolve and the teeth mounted on the bottom push the trash aside, piling it up in the rows on each side.

Then, there is a roto tiller which works up the soil. Near the roto tiller on both sides are two teeth which shoot DDT into the soil to kill nematodes and other soil organisms.

Back of this is the mulch-paper-laying gadget. The paper is laid on the new disinfected, roto-tilled, clear earth and is covered lightly on each side with dirt. Due to the incessant high winds on Molokai, a man usually follows with a hoe and makes sure the paper stays down. It is a messy looking job after the black tar paper is laid—but it will save soil and moisture.

This method serves to reduce evaporation, control weeds, and keep the soil temperature around the pineapple roots as high as possible.

After the paper is laid, the pineapple slips are planted. Slips are 12 inches apart, on both sides



**This shows how gullies occur on Molokai, where local soil and rainfall conditions create unusual erosion problems.**

of the 27-inch paper, in double rows. The paper rows are about 5 feet apart. The plantings are made in blocks of 100 to 130 feet wide and from 400 to 2,000 feet long. Once the pineapple plants are in the ground, everyone begins hoping for rain. The plants can stay alive several months without rain. As they grow, they are sprayed with iron sulphate. Iron is necessary to pineapple growth and in Hawaiian soils it is lacking in available form. The iron is taken into the plants through the leaves. Large amounts of nitrogen fertilizer are applied in either the solid or liquid form. Insecticides, selective weed killers, and hormones also are sprayed on the plants throughout the cycle. These various kinds and combinations of sprays are put on by 50-foot booms with nozzles attached, by airplanes, and by a general mist sent forth from a truck traveling roads which are spaced at 100-foot intervals. In 14 to 22 months, the first pineapples are ready for harvest, provided the rainfall has been adequate.

The blocks are 100 to 130 feet wide, with roads on each side. Down them proceed the harvesters with 50-foot booms, the pickers following behind the booms and dropping the ripe fruit on a moving belt, which carries it to a large bin on a truck holding  $3\frac{1}{2}$  to 4 tons of ripe fruit. The load is then hauled to sea-going barges, which take the fruit to Honolulu for processing.

Machinery and soil conservation had almost come to a parting of the ways. The first requisite was a machine for laying the paper, for putting in the

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roads, and for laying out the blocks uniformly wide and with only minimum curves. The companies have tried many things. One that has worked fairly well has been the planted ditch. Through a block is dug a small ditch on grade to lead the water off to a grassed waterway, pineapples being planted through the ditch. This is not completely successful, for the pineapples on the berm dry out and the ditches often are not capable of carrying the water.

The Pacific Pineapple Co., with the help of the Molokai Soil Conservation District, tried a different approach this last year, which so far has proved successful. On steep slopes the pineapples were planted on the contour, curving around the hills. Below each strip is the road, which also serves as a water-disposal ditch. Excess water is led into grassed waterways.

We made some mistakes. One of them was in not providing enough ditches for areas with standing water; the plants rotted and died. During a heavy Kona storm of last winter (4 to 6 inches in 24 hours) there was very little erosion even though the grassed waterways were not then fully vegetated. The contoured strips allowed the water to soak into the ground. The field was formerly in grass and after only three plowings the grass roots were not all decomposed and did much to stop run-away water. At the end of this cycle the area will be trash-mulched and planted on the contour with grassed waterways. Eric Reppun, manager of Pacific Pineapple Co., was pleased and has asked the district to help him lay out his other fields.

On the same watershed, fields joining the one that was contoured lost a lot of soil in the January Kona storm. Much of this loss could have been

stopped had the fields not been laid out in long strips which disregarded the slope of the land.

The pineapple companies on Molokai are aware of soil erosion. They also know that they must continue to use large machinery. Methods for soil conservation are being worked out, and in time it is hoped that we may see a blue sea after the Kona storms.

## WHERE EVERY DROP IS PRECIOUS

**T**HERE will be 40 percent more water for the irrigation of farms in the vicinity of Junction next year because the townspeople and eight progressive farmers have paid \$8,000 to line the ditch with concrete, according to Ambrose Dalton, a supervisor of the Piute County (Utah) Soil Conservation District.

These people have known for years that a lot of water was seeping away in the gravelly soil before reaching their farms. In 1939, before the district was organized, these farmers tried to obtain assistance through the water-facilities program of the Soil Conservation Service. An investigation by SCS technicians revealed that water was being lost through seepage all along the 5-mile ditch. They recommended that the water be piped or that the ditch be lined with concrete. Everyone needed to cooperate in bearing the expense. A few declined, so the project was delayed and water continued to seep away.

By 1948 the problem had become so serious that SCS technicians and the county agent again were consulted. It was found that about half of the water was being lost in the lower part of the ditch. The farmers called on the district to help. The problem was given first priority, and Gordon Hansen, SCS engineer, drew up detailed plans.

A contract was made with a ditch-lining concern to construct a ditch 12 inches wide at the bottom, 33 inches at the top, and with sides 15 inches high, to be lined with 4 inches of concrete.

First, the old ditch bottom was carefully shaped and reinforcing steel was placed in it. Then the machine, its bin loaded, was brought into use. As it moved forward it picked up the reinforcing steel and placed the concrete around it. Lining was accomplished at the rate of 1,000 feet a day. The contractor lined 6,450 feet of the ditch at a cost of \$1.20 a foot.

"This means that we will have 40 percent more water to mature our crops next year," says Dalton.

During the period of high water, winter and early spring, the velocity exceeds 10 feet per second



Trash-mulch machine pushing trash to either side of bed, and laying down a covering of paper.



The machine is pulled by cable and runs along iron tracks.

and a lot of gravel and rocks are carried along. The abrasive action of moving rocks would cause a lot of wear on the ditch, so during this period the water will be turned into the old channel.

"Good ditch management saves a lot of maintenance work, money, and water," says Hansen.

In addition to lining the ditch, these farmers

have installed a water divider and constructed an overnight storage reservoir. The reservoir is being lined with bentonite, and will be used to store water at night so irrigation can be done during daytime and with a larger stream. Numerous field ditches are being relocated and land is being leveled to improve the efficiency of water use.

**MILESTONES OF PROGRESS.**—Recorded crop production on 9,348 farms in 47 States increased 35 percent after needed conservation was applied.

On farms with 80 percent of needed conservation applied, gross income was \$1,370 higher (or \$4.90 more per acre) than similar farms with only 47 percent application.

In the last decade, nearly 1,000,000 farmers and ranchers have begun operating their land under basic conservation plans, and several million more

are well along with application of practices on their land.

—R. W. ROGERS



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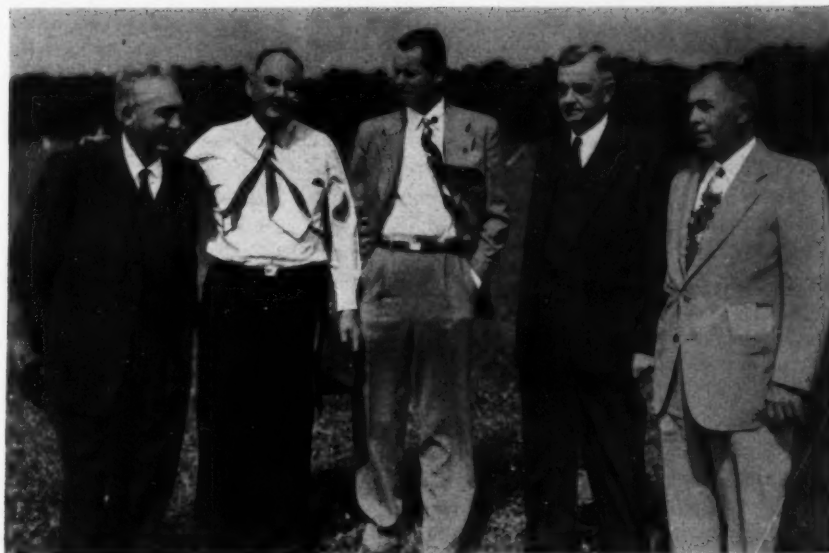
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These men spark the soil conservation district movement in Georgia. All district supervisors, they comprise the State Soil Conservation Committee: W. F. Hall, Jack Eubank, Jim L. Gillis, Jr., Z. P. Almon, and O. W. Price.



## DISTRICT SUPERVISORS IN FOREFRONT ON GEORGIA STATE COMMITTEE

By JULE G. LIDDELL

**"YOU** make the suggestions and we make the decisions," said James L. Gillis, Jr., chairman of the Georgia State Soil Conservation Committee, to members of the Advisory Committee.

The State committee does just that. The members are constantly calling for suggestions and then carefully considering each before making a decision.

Of course, the State committee members have their own ideas, and express them freely.

The State Soil Conservation Committee is set up by law and its members are appointed by the Governor. Each member must be a soil conservation district supervisor. Three of the five present members are serving as chairmen of their respective districts.

Gillis, of Soperton, is chairman of the Ohoopce River Soil Conservation District. He also is chair-

man of the legislative committee of the Georgia State Association of Soil Conservation District Supervisors, and a past president of the association. He and his brother Hugh and their father, Jim L. Gillis, Sr., make a team which operates about 20,000 acres in general farming and woodland. He has developed a farm conservation plan and is applying the principles of land capability. He is a graduate in forestry and applies the latest methods in woodland management.

W. F. Hall, of Sparta, is on the board of the Piedmont Soil Conservation District. He is area vice president of the National Association of Soil Conservation Districts, and was president of the State association when it was host to the National Association at its annual meeting in 1950. The success of the meeting was due more to his efforts than to those of any other person. Hall has developed farm conservation plans on his lands.

J. E. Eubank, chairman of the Little River Soil Conservation District, has taken the lead in local contests to intensify more interest in conservation

Note.—The author is State conservationist, Soil Conservation Service, Athens, Ga.

of soil and water. He is very active in district operations, and is applying conservation measures on his land.

O. W. Price is chairman of the Upper Ocmulgee River district and is active in its operations. He is farming his land in accordance with its capabilities.

Z. P. Almon is on the West Georgia Board of Supervisors. He lives in what has been an all-cotton section. He has taken leadership in changing to close-growing crops. He told me that this year is the first time in his life that he did not plant any cotton. One of the most outstanding shifts from row crops to close-growing crops and pasture development is taking place in west Georgia.

The State committee, composed of the foregoing men, is charged by law to pass on programs projected by soil conservation districts within the State. Helping to govern the affairs of their own districts enables these men to know what a district's plan of work should be.

Soil conservation districts are set up to enable farmers to go together and work out a plan for operation. Farmers govern these districts; hence, it was reasoned that farmer-supervisors should lead and coordinate the whole program within the State.

Advisory members are drawn from the Federal and State agricultural agencies working in Georgia. The president of the State Association of Soil Conservation District Supervisors is invited by the State committee to attend monthly meetings as an advisory member. There is always a high percentage of the advisory members present. If an agency head is prevented from attending, he usually sends a representative.

The meetings are held in different parts of the State. They may be at State experiment station sites, at Federal experiment station sites, or even at selected farms. Recently the Ocmulgee Soil Conservation District had the members as their guests for a day at Perry. The morning was spent on business matters, with all advisory members present. The afternoon was devoted to a tour of the farm of Sam Nunn, chairman of the local district, to observe conservation measures and land use.

About once a year, the committee meets at one of the 4-H Club camps. The last was at the Laura Walker State Park near Waycross, with a special group of 4-H boys and girls on wildlife conservation. The committee is alert for all activities that have to do with soil and water conservation.

Last year the committee sponsored a textbook, "Conserving Soil Resources," pointed at the

eighth-grade level for public schools in the State. They selected three authors, one each from the College of Agriculture, the State agricultural extension service, and the Soil Conservation Service. After the book was printed, the State Soil Conservation Committee, through its chairman and executive secretary, asked every district supervisor to take the lead in his county in calling on the county school superintendent to urge that copies of the book be put to work in the schools.

The committee sponsors a Soil Conservation Week, proclaimed by the Governor, every year. Last year, these were among the results:

Newspapers published 41 special editions, 767 articles, 87 editorials, 571 pictures, and 602 advertisements—all about soil conservation farming.

Radio stations presented 132 soil conservation programs.

Georgia ministers preached 274 soil conservation sermons to audiences totaling 32,121 persons.

Eighty-seven tours were arranged to study the work of soil conservation district cooperators. The attendance was 3,555 persons. In addition, 55 demonstrations were attended by 4,619 persons.

Other meetings on soil conservation totaled 136, with 7,518 persons present. Civic clubs, with 2,281 members attending, had 62 soil conservation programs.

Motion pictures were shown to 266 groups, or a total of 11,103 persons.

More than 430 veterans' classes, with attendance of 9,527, had soil conservation programs.

This is the kind of results obtained when farmer-supervisors, serving as the Georgia State Soil Conservation Committee, "make the decisions."



#### CROP PAYS FOR IRRIGATION SYSTEM.—

Ralph Gainey, shade tobacco grower in Grady County, Ga., and supervisor of the Flint River Soil Conservation District, reports that irrigating his tobacco last year increased his yield about 25 percent—enough to pay for the irrigation system in 1 year. He also irrigated his pasture during a fall drought, which gave him good grazing when neighboring farms had none.

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## WILLING ACRES

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the film shows that crops such as cotton, corn, and tobacco may also be produced profitably by practical land use. The story emphasizes the fact that farm women are quick to recognize what practical land use can do to bring about better living conditions for the family.

The educational message is tied together with a heart-warming story of folks in one community . . . the telephone operator who knows all and tells most of it . . . Fred Sanders, who lived on a farm and left it . . . and the girl and the farm he came back to.

**NEW EXECUTIVE SECRETARY.**—H. Wayne Pritchard will take over the duties of executive secretary of the Soil Conservation Society of America, it is announced by Morris E. Fonda, president. Pritchard will come to the Society on January 1, 1952, from the Iowa State Soil Conservation Committee where he has been the secretary for this group. The office of the Society and the new executive secretary will be located in Des Moines, Iowa.

In his new position, Pritchard will be the executive officer for the Soil Conservation Society, which numbers thousands of members in the United States, Canada, South America, and other countries. The Society's principal work is to advance the science of land use and water and soil conservation. Its members come from soil conservation interests in public, State, and Federal agricultural groups, private industry, farmers, and other individuals interested in soil and water conservation.

Born in Canada, Pritchard moved to the United States in early youth to commence a long agricultural career. After obtaining his degree in vocational education at Iowa State College, he taught vocational agriculture in Iowa for 8 years. His teaching career was interrupted by 2 years in the intelligence division of the Army Air Corps, where he served in India and the Pacific area. In 1943 Pritchard joined the State Soil Conservation Committee in Iowa as secretary, and in this work he has taken a leading part in soil conservation in Iowa and throughout the Midwest.

In addition to his career in agriculture, Pritchard has a background of farm experience. In 1949 he was selected Honorary Iowa Farmer by the State Future Farmers of America organization. He has served as president of the Iowa Vocational Association and vice president of the Iowa Vocational Agriculture Teachers Association.

**SONG OF SOIL.**—Ernest D. Walker, extension soil conservationist at Urbana, Ill., is one of the poet laureates of the land revolution. He is also the

valued bass of a barber-shop quartette, "The Tune Tinkers." His combination of interests and attributes resulted in his composing "A Conservation Song" (sung to an arrangement of the well-known "Old MacDonald Had a Farm"), which was on the program of the annual meeting of Illinois district supervisors in 1948, has been used since then by other groups, and has also been recorded for phonograph and radio production.

**YOUNG WINNER.**—Honors are piling on Bruce Ketch of Bath, Steuben County, N. Y., as a result of his being one of the national winners in the 4-H soil and water conservation contest. Nationally, he received a scholarship valued at \$300. Here he is receiving from Carl Wellington, Steuben County Soil Conservation District treasurer, the certificate indicating his national achievement. Additionally, he received a gold wrist watch (on the table) as the emblem of his State victory. As sectional winner, he received an all-expense paid trip to the National 4-H Club Congress.



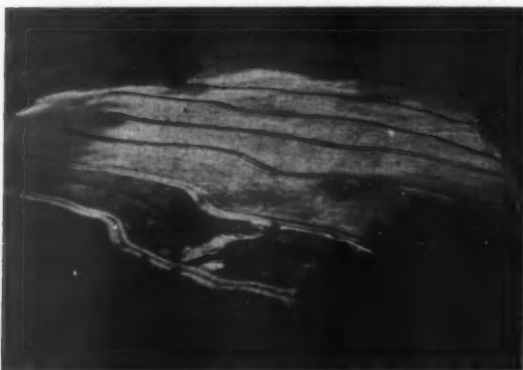
**HIGH RETURNS FROM GRASS.**—J. S. Lay, of Oconee County, S. C., fed his hogs dry lot in 1948. The return was approximately 12 pounds of meat per bushel of corn fed to feeder hogs. Pig litters averaged 6.2 per sow on pigs raised.

In 1949 Lay grazed all his hogs. They were permitted to range on all the fescue and clover pasture they wished, grazing mainly on Ladino clover. Records were kept on 20 feeders that were marketed, to learn if grazing paid. Lay got 20 pounds of meat per bushel. He had fewer pig losses; 7.5 pigs were raised per sow.



**CONSERVATION VALLEY.**—In 1933 Baker Valley in Allegany County, N. Y., was about ready to go back to the Indians. Of 1,983 watershed acres, 1,600 formerly in forest had been cleared for pasture and crops. Erosion, gullying, stream-bank cutting, and flooding were in high gear.

Probably the Indians would have refused to take it back at that time. This year, however, I don't doubt that they would jump at the chance. But, with all the improvements, it is unlikely they would recognize their old hunting grounds.



Strip cropping, and diversions 225 feet apart, on the L. N. Watson farm, West Almond, N. Y.

There are six brand-new ponds, installed by SCS technicians and the State Division of Lands and Forests. There are two other ponds built and "owned" by Nature's own conservationists, the beavers—here through courtesy of the New York Fish and Game Department. All the ponds now help control floods, furnish fire protection and recreation, and serve farm uses.

That is only one phase of the complete watershed conservation program that makes Baker Valley a model. The whole area has been protected by reforestation and conservation cropping systems. On the 12 private holdings, each in the Allegany County Soil Conservation District, pastures have been improved with better legume seedings. About 500 acres of woods have been fenced off from grazing. Six hundred acres have been reforested. Over 200 cropped acres are now on contour, in strips with diversions, terraces, and other soil-saving practices.

State and Federal agencies have worked hand-in-glove with farmers and sportsmen. Future Farmers and 4-H Club members and their teachers worked on tree planting. Several conservation field days, sponsored by the extension service, the Farm Bureau, and the Production and Marketing Administration, helped get the job done. Essential financing was aided by Pittman-Robertson wildlife-restoration funds made available by the State Conservation Department.

The results of the united efforts are right where you can put your finger on them. Ponds have retarded the flow of millions of gallons of spring runoff waters. Flood peaks have been reduced by vegetative cover and other practices. Stream banks have held firm. One stream that used to go dry held water right through the droughty summer of 1949; other streams have maintained more stable water levels. Pond levels have been steadier. Wild game and fish are returning to the area.

One of the landowners, Lynn Watson, donated 10 acres of his property to the Belmont Conservation Club. This game-management area now features a complete conservation program on what was originally thorn-brush pasture. A 1½-acre pond built by SCS technicians has been stocked with an experimental variety of fish. The adjoining area has been reforested and planted with shrubs affording game cover and food. The Allegany Federation of Sportsmen's Clubs uses the spot as a showcase of recommended wildlife conservation measures.

What has been done in the past 18 years amounts to an 80 percent change in land use for the watershed. And the principle followed was the tried and true—"each acre according to its capability." Anyone looking for a nearly perfect example of how men and natural resources can get together would do well to study Baker Valley.

It's Conservation Valley, now.

—ROBERT A. REED



Farm pond and reforestation area. The island is for protection of nesting ducks.

**NOW IS THE TIME.**—It is not too early to make up that Christmas list of subscriptions to *SOIL CONSERVATION Magazine*. Send names and addresses of good friends, and check to cover, at only \$1.25 each, to Superintendent of Documents, Government Printing Office, Washington 25, D. C.